

Hampton Roads CMS Data and Applications



Presented by: Keith Nichols
NATMEC 2002
May 13, 2002

The Hampton Roads Region

- 10 cities, 6 counties
- Over 1.5 million residents
- Home to 25% of the nation's military
- One of the largest ports on the East Coast
- Tourist destination



The Hampton Roads Region

- Topography produces a diverse transportation system
 - 5 tunnel facilities
 - Drawbridges
 - Ferries
 - Port facilities
 - Fewer collectors, busier arterials



The Hampton Roads Region

- Regional transportation system affected by many factors
 - 4-lane tunnel facilities often carry over 100,000 vehicles/day
 - Ports produce high truck volumes
 - Traffic fluctuates greatly due to tourist volumes, military deployments
 - Many jurisdictions = Many visions for transportation system



Congestion Management System

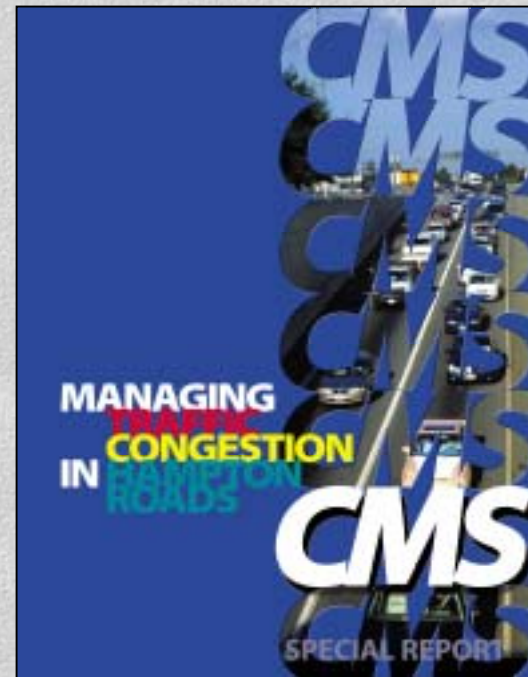
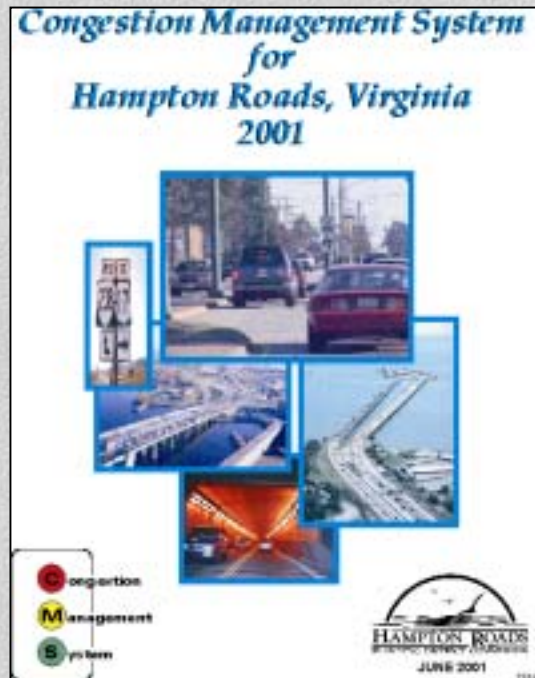
- Required by TEA-21 legislation in all Transportation Management Areas (Population > 200,000)
- Ongoing effort to identify, develop, evaluate, and implement the most effective transportation strategies to reduce congestion and enhance mobility
- First Hampton Roads CMS report released in October 1995

CMS Network

- 1,163 centerline miles and 4,169 lane-miles of roadway in CMS network
- Includes most of the thoroughfare system (minor arterials and above)
- Over 30 million daily vehicle-miles of travel on the CMS network
- Includes future network coverage as well

Congestion Management System

- Third edition of report released June 2001.
- Recently released CMS Special Report for mass distribution



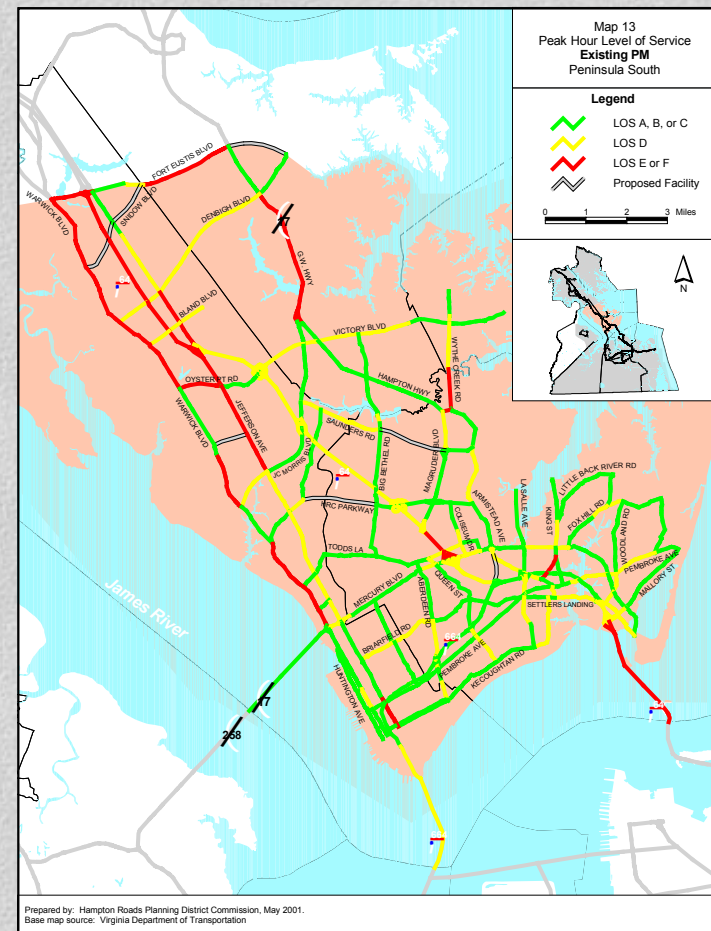
Hampton Roads CMS Report Components

- Regional Historical Transportation Trends
 - VMT
 - Vehicle Registrations
 - Vehicle Occupancy Rates
 - HOV Lane Usage
 - Transit
- Regional and National Comparisons
- Bridge and Tunnel Trends
- Congestion Analysis



Congestion Analysis

- Morning and afternoon levels-of-service based on various traffic and roadway characteristics
 - Regional CMS database
 - Florida LOS software



CMS Database

- Continuously updated Excel file

Microsoft Excel - Cms data

File Edit View Insert Format Tools Data Window Help

Arial 10 B I U [Formatting icons] 65%

DWG359

	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM
				1999	1999		2000	2000	2000	2001	2001	2001	
				Count	Count		Count	Count	Count	Count	Count	Count	
				Date	Source		Date	Source	Date	Source	Date	Source	
1	FACILITY NAME	SEGMENT FROM	SEGMENT TO										
386	RTS 256	RTS 620 (SCOTT'S FACTORY RD)	WIL SMITHS BLVD	4,372					8,876	3/4/01			
387	SAFARIHILL RD	US4	RTS 32	0					7,220	10/24/01	VOOT DB		
388	CENTERVILLE RD	JOHN TYLER HWY	MONTICELLO AVE	4,356		3,354	spring	county	3,662	June	county		
389	CENTERVILLE RD	MONTICELLO AVE	NEV'S RD	4,356		3,354	spring	county	3,662	June	county		
390	CENTERVILLE RD	NEV'S RD	LONGHILL RD	3,882		4,444	spring	county	4,429	June	county		
391	CENTERVILLE RD	LONGHILL RD	RICHMOND RD	3,236		3,812	spring	county	3,460	June	county		
392	CHUCKMAN WATKINS PKWY	JAMESTOWN RTE 359	NCH JAMES RIVER BR	0									
393	CHUCKMAN RD	RTS 69	RTS TWO (MARTIN LUTHER)	8,351		7,369	spring	county	8,392	June	county		
394	CHUCKMAN RD	RTS TWO (MARTIN LUTHER)	US4	8,351		8,351	spring	county	8,496	June	county		
395	144	NEW HAVEN CL	RTS 36	0		0			42,564	6/20/01	VOOT DB		
396	144	RTS 36	RTS 387	0		0			43,063	6/20/01	VOOT DB		
397	144	RTS 387	YORK COLLEGE	0		0			50,435	6/20/01	VOOT DB		
398	144	YORK COLLEGE	NEWPORT NEWS CL	0		0			77,389	6/20/01	VOOT DB		
399	144 (HCV)	YORK COLLEGE	NEWPORT NEWS CL	0		0							
400	POWERSOUND RD	MONTICELLO AVE	WILLIAMSBURG CL	17,431		3,001	spring	county	3,851	June	county		
401	POWERSOUND RD	JOHN TYLER HWY	NEV'S RD	12,886		12,324	spring	county	12,959	June	county		
402	POWERSOUND RO/SANDY DAY RD	JAMESTOWN RD	JOHN TYLER HWY	7,730		7,227	spring	county	7,553	June	county		
403	JAMESTOWN RD	JAMES RIVER	COLONIAL PARKWAY (RTE 359)	2,489		2,489	6/20/01	Free					
404	JAMESTOWN RD	COLONIAL PARKWAY (RTE 359)	SANDY DAY RD (RTE 69)	3,645		3,074	spring	county	7,540	June	county		
405	JAMESTOWN RD	SANDY DAY RD (RTE 69)	WIL SMITHS BLVD	14,768		13,430	spring	county	14,781	June	county		
406	JOHN TYLER HWY	CHIPSUS CITY CL	MONTICELLO AVE	3,052		3,347	spring	county	3,080	June	county		
407	JOHN TYLER HWY	MONTICELLO AVE	COOPERVILLE RD (RTE 69)	8,547		8,547	spring	county	8,586	June	county		
408	JOHN TYLER HWY	COOPERVILLE RD (RTE 69)	POWERSOUND RD (RTE 69)	14,524		14,637	spring	county	14,425	June	county		
409	JOHN TYLER HWY	POWERSOUND RD (RTE 69)	RTS 12 (STANLEY DR)	14,963		14,963	spring	county	15,397	June	county		
410	JOHN TYLER HWY	RTS 12 (STANLEY DR)	RTS 69	15,396		15,396	spring	county	14,942	June	county		
411	LONGHILL CONNECTOR RD	LONGHILL RD (RTE 69)	POWERSOUND RD	13,343		10,708	spring	county	14,426	June	county		
412	LONGHILL RD	COOPERVILLE RD (RTE 69)	RTS 69	10,708		9,079	spring	county	12,786	June	county		
413	LONGHILL RD	RTS 69	LONGHILL CONNECTOR RD	13,343		10,708	spring	county	10,843	4/25/01			
414	MERRIMAC TRL	NEWPORT NEWS CL	YORK CL (SOUTH OF GROVE BLVD)	0		0			16,302	4/25/01			
415	MERRIMAC TRL	YORK CL @ 69	POWERSOUND RD (YORK CL)	0		0			16,708	7/23/01	VOOT DB		
416	MONTICELLO AVE	JOHN TYLER HWY	COOPERVILLE RD (RTE 69)	0		0			0				
417	MONTICELLO AVE	COOPERVILLE RD (RTE 69)	NEV'S RD	0		0			0				
418	MONTICELLO AVE	NEV'S RD	RTS 69	0		12,774	spring	county	12,387	June	county		
419	MONTICELLO AVE	RTS 69	POWERSOUND RD (RTE 69)	0		20,253	spring	county	18,853	June	county		
420	MONTICELLO AVE	WILLIAMSBURG CL	TRIPOLI RD	0		15,001	spring	county	15,006	4/25/01			
421	MONTICELLO AVE	TRIPOLI RD	WILLIAMSBURG CL	0		12,000	spring	county	12,536	4/25/01			
422	MONTICELLO AVE	MONTICELLO AVE	POWERSOUND RD	3,882		4,503	spring	county	10,847	June	county		
423	OLD STAGE RD	NEW HAVEN CL	RTS 615 (BARNES RD)	0		4,416	spring	county	7,772	10/24/01	VOOT DB		
424	OLD STAGE RD	RTS 615 (BARNES RD)	US4	0		4,416	spring	county	7,772	10/24/01	VOOT DB		
425	OLDE TOWN RD	LONGHILL RD	RICHMOND RD	13,886		13,886	spring	county	13,768	June	county		
426	POCAHONTAS TRL	EDL WOODS	YORK CL @ 69	0		0			15,349	10/24/01	VOOT DB		
427	POCAHONTAS TRL	YORK CL	BASE ROUTE 60 RELOCATION	14,027		12,444	spring	county	12,292	June	county		
428	POCAHONTAS TRL	BASE ROUTE 60 RELOCATION	NEWPORT NEWS CL	10,430		10,430	spring	county	10,721	June	county		
429	RELOCATED RTE 69	RTS 69	NEWPORT NEWS CL	0		0			0				
430	RELOCATED RD	RTS 69	OLDE TOWN RD (RTE 69)	23,276		13,175	spring	county	17,096	June	county		

Microsoft Excel - Cms...

9:40 AM

CMS Database

- Data for all 1,300+ roadway segments
 - Historical, existing, and projected traffic volumes
 - Traffic characteristics (peaking factors)
 - Roadway characteristics (# of lanes, lane width, # of signals, speed limit, functional class, etc.)
 - Planned and programmed roadway improvements
 - Peak hour congestion levels
 - Roadway IDs for importing VDOT traffic counts
 - Mapping IDs for GIS/Long Range Plan connectivity
- Other files include HOV data, occupancy data, accident data, travel time data, etc.

How do we get all this data?

- Data collected from a variety of sources
 - VDOT (raw counts from various programs, roadway characteristics, HOV data, etc.)
 - Locality count programs
 - Bridge-Tunnel facilities
 - Special studies
- PDC data
 - Classification counts for select locations
 - Travel time

Manipulating Data

- Data requires significant manipulation
 - Significant amount of data formatting required before importing into Excel file
 - Various data formats
 - Various VDOT traffic count programs
 - Various jurisdiction traffic count programs
 - Significant amount of data is not usable
 - Requires both automated and manual check of results

Other CMS Work

- Congested Locations
 - In-depth corridor-level analysis of selected congested locations
 - Recommend short term remedies
 - Transportation System Management (TSM)
 - Signal timings
 - ITS
 - Transportation Demand Management (TDM)
 - Ridesharing
 - HOV usage
 - Transit



Other CMS Work

- Travel Time Collection
 - Collect for CMS network every five years
 - Updated in 2000 to GPS and GIS technology
 - Historical trends
 - Evaluate impacts of transportation improvements on travel time
 - Contours



Other CMS Work

- Safety
 - Freeway incident study
 - VDOT Smart Traffic Center incident database
 - Location and duration of incidents
 - Effectiveness of Incident Response Team



Other CMS Work

- Accident Study (ongoing)
 - Analyze accident numbers and rates on freeway segments and at all significant intersections throughout the CMS network
 - Requires **extensive** data collection and manipulation to produce regional accident database
 - Almost 90,000 reported accidents in the region over the 3-year period
 - Each jurisdiction maintains their own accident data with varying levels of usability



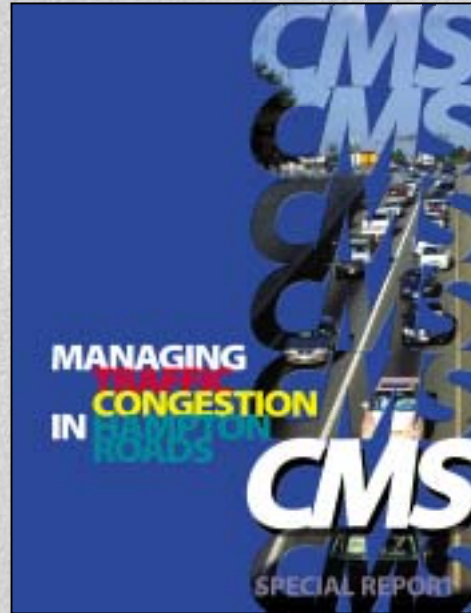
Benefits of CMS Data

- Identify regional transportation trends
- Identify congested areas
 - Examine locations for possible short term remedies
 - Aids in allocation of CMAQ/RSTP funds
 - Aids in development of Long Range Plan
- Identify effectiveness of traffic mitigation strategies

Benefits of CMS Data

- Identify dangerous locations
 - Why are they dangerous?
 - Aids in procuring grants for safety improvements
- Resource available for localities, special studies, data requests, etc.
 - In process of making data available on HRPDC website
- Fulfills federal requirements

Questions?



For more information:

**Keith Nichols
Transportation Engineer
723 Woodlake Drive
Chesapeake, VA 23320
757.420.8300
knichols@hrpdc.org**

